

## WHAT IS CLAIMED IS:

1. A method of treating a disorder associated with pathological organ or tissue physiology or morphology, the method comprising transplanting into a subject in need thereof a therapeutically effective mammalian organ or tissue graft, said organ or tissue graft selected not substantially expressing or presenting at least one molecule capable of stimulating or enhancing an immune response in said subject, thereby treating the disorder in said subject.

2. The method of claim 1, further comprising treating said subject with an immunosuppressive regimen prior to, concomitantly with or following said transplanting said organ or tissue graft into said subject, thereby promoting engraftment of said organ or tissue graft in said subject.

3. The method of claim 2, wherein said treating said subject with an immunosuppressive regimen is effected by administering an immunosuppressant drug to said subject.

4. The method of claim 3, wherein said immunosuppressant drug is capable of blocking binding of a lymphocyte coreceptor with a ligand of said lymphocyte coreceptor.

5. The method of claim 4, wherein said immunosuppressant drug is CTLA4-Ig.

6. The method of claim 3, wherein, said administering an immunosuppressant drug to said subject is effected during a single time period selected from a range of 1 to 20 days.

7. The method of claim 1, wherein said at least one molecule capable of stimulating or enhancing an immune response in said subject is a lymphocyte coreceptor or lymphocyte coreceptor ligand.

8. The method of claim 7, wherein said lymphocyte coreceptor or lymphocyte coreceptor ligand is selected from the group consisting of B7-1, CD40, and CD40L.

9. The method of claim 1, wherein said selecting said organ or tissue graft is effected via RT-PCR analysis of said organ or tissue graft.

10. The method of claim 1, wherein said organ or tissue graft is a renal organ or tissue graft, and whereas said transplanting said organ or tissue graft into said subject is effected by transplanting said organ or tissue graft into an anatomical location of said subject selected from the group consisting of the renal capsule, the kidney, the portal vein, the liver, the spleen, the testicular fat, the sub-cutis, the omentum and the intra-abdominal space.

11. The method of claim 1, wherein said organ or tissue graft is a pancreatic organ or tissue graft, and whereas said transplanting said organ or tissue graft into said subject is effected by transplanting said organ or tissue graft into an anatomical location of said subject selected from the group consisting of the portal vein, the liver, the pancreas, the renal capsule, the testicular fat, the sub-cutis, the omentum and the intra-abdominal space.

12. The method of claim 1, wherein said organ or tissue graft is a hepatic organ or tissue graft, and whereas said transplanting said organ or tissue graft into said subject is effected by transplanting said organ or tissue graft into an anatomical location of said subject selected from the group consisting of the portal vein, the liver, the renal capsule, the testicular fat, the sub-cutis, the omentum, the spleen, and the intra-abdominal space.

13. The method of claim 1, wherein said organ or tissue graft is a cardiac organ or tissue graft, and whereas said transplanting said organ or tissue graft into said subject is effected by transplanting said organ or tissue graft into an anatomical location of said subject selected from the group consisting of the heart cavity, the heart, the myocardium and the intra-abdominal space.

14. The method of claim 1, wherein said organ or tissue graft is a lymphoid organ or tissue graft, and whereas said transplanting said organ or tissue graft into said subject is effected by transplanting said organ or tissue graft into an anatomical location of said subject selected from the group consisting of the portal vein, the liver, the renal capsule, the sub-cutis, the omentum, the spleen, and the intra-abdominal space.

15. The method of claim 1, wherein the disorder is a kidney disorder, and whereas said organ or tissue graft is a renal organ or tissue graft.

16. The method of claim 1, wherein the disorder is a pancreatic disorder, and whereas said organ or tissue graft is a pancreatic organ or tissue graft.

17. The method of claim 16, wherein said pancreatic disorder is diabetes, and whereas said pancreatic organ or tissue graft is a pancreatic islet organ or tissue graft.

18. The method of claim 1, wherein the disorder is a hepatic disorder and/or metabolic disorder, and whereas said organ or tissue graft is a hepatic organ or tissue graft.

19. The method of claim 1, wherein the disorder is a cardiac disorder, and whereas said organ or tissue graft is a cardiac organ or tissue graft.

20. The method of claim 1, wherein the disorder is a hematological and/or genetic disorder, and whereas said organ or tissue graft is a lymphoid organ or tissue graft.

21. The method of claim 1, wherein said lymphoid organ or tissue graft is selected from the group consisting of a splenic graft, a lymph node derived graft, a Peyer's patch derived graft, a thymic graft and a bone marrow derived graft.

21. The method of claim 17, wherein said subject is a mammal.

22. The method of claim 21, wherein said mammal is a human.
23. The method of claim 1, wherein said mammalian organ or tissue graft is a human organ or tissue graft, or a porcine organ or tissue graft.
24. A method of treating a disorder associated with pathological organ or tissue physiology or morphology, the method comprising transplanting into a subject in need thereof a therapeutically effective human organ or tissue graft, said human organ or tissue graft selected at a stage of differentiation corresponding to 5 to 16 weeks of gestation, thereby treating the disorder in the subject.
25. The method of claim 24, wherein said stage of differentiation corresponds to 6 to 15 weeks of gestation.
26. The method of claim 25, wherein said stage of differentiation corresponds to 7 to 14 weeks of gestation.
27. The method of claim 26, wherein said stage of differentiation corresponds to 7 to 8 weeks of gestation.
28. A method of treating a disorder associated with pathological organ or tissue physiology or morphology, the method comprising transplanting into a subject in need thereof a therapeutically effective porcine organ or tissue graft, said porcine organ or tissue graft selected at a stage of differentiation corresponding to 20 to 63 days of gestation, thereby treating the disorder in the subject.
29. The method of claim 28, wherein said stage of differentiation corresponds to 20 to 56 days of gestation.
30. The method of claim 29, wherein said stage of differentiation corresponds to 20 to 42 days of gestation.
31. The method of claim 30, wherein said stage of differentiation

corresponds to 20 to 35 days of gestation.

32. The method of claim 31, wherein said stage of differentiation corresponds to 20 to 28 days of gestation.

33. The method of claim 32, wherein said stage of differentiation corresponds to 24 to 28 days of gestation.

34. The method of claim 33, wherein said stage of differentiation corresponds to 27 to 28 days of gestation.

35. A method of evaluating the suitability of a graft for transplantation into a subject, the method comprising testing the graft for expression or presentation of at least one molecule capable of stimulating or enhancing an immune response in the subject, thereby evaluating the suitability of the graft for transplantation into the subject.

36. The method of claim 35, wherein said at least one molecule capable of stimulating or enhancing an immune response in the subject is a lymphocyte coreceptor or lymphocyte coreceptor ligand.

37. The method of claim 36, wherein said lymphocyte coreceptor or lymphocyte coreceptor ligand is selected from the group consisting of B7-1, CD40 and CD40L.

38. The method of claim 35, wherein said testing is effected via RT-PCR analysis of the graft.

39. The method of claim 35, wherein the graft is selected from the group consisting of an organ explant, a tissue explant, a cell explant, an organ culture, a tissue culture, and a cell culture.

40. The method of claim 35, wherein the subject is a mammal.

41. The method of claim 40, wherein said mammal is a human.
42. The method of claim 35, wherein the graft is a mammalian graft.
43. The method of claim 42, wherein said mammalian graft is a human graft or a porcine graft.
44. A method of evaluating the stage of differentiation of a mammalian organ or tissue most suitable for transplantation thereof into a mammalian subject, the method comprising evaluating a test transplant taken from the organ or tissue at a specific stage of differentiation for the presence of at least one molecule capable of stimulating or enhancing an immune response in the subject prior to and/or following a test transplantation of said test transplant into a mammalian test recipient, wherein an effective absence of said at least one molecule in said test transplant prior to and/or following said test transplantation indicates that said specific stage of differentiation is suitable for transplantation of the organ or tissue into the subject.
45. The method of claim 44, wherein said evaluating said test transplant for said presence of said at least one molecule is effected following a posttransplantation period of said test transplantation selected from the range of 1 second to 45 days.
46. The method of claim 44, wherein said test recipient is a rodent and/or the subject.
47. The method of claim 46, wherein said rodent is a mouse.
48. The method of claim 44, wherein said test recipient bears functional human T lymphocytes.
49. The method of claim 48, wherein said human T lymphocytes and said organ or tissue are non syngeneic.
50. The method of claim 44, wherein said at least one molecule capable of

stimulating or enhancing an immune response in the subject is a lymphocyte coreceptor or lymphocyte coreceptor ligand.

51. The method of claim 50, wherein said lymphocyte coreceptor or lymphocyte coreceptor ligand is selected from the group consisting of B7-1, CD40 and CD40L.

52. The method of claim 44, wherein said testing is effected via RT-PCR analysis of the test transplant.

53. The method of claim 44, wherein the organ or tissue is selected from the group consisting of an organ explant, a tissue explant, a cell explant, an organ culture, a tissue culture, and a cell culture.

54. The method of claim 44, wherein the organ or tissue is a human organ or tissue or a porcine organ or tissue.

55. The method of claim 54, wherein the organ or tissue is a human organ or tissue and whereas said specific stage of differentiation is selected corresponding to 5 to 16 weeks of gestation.

56. The method of claim 54, wherein the organ or tissue is a porcine organ or tissue and whereas said specific stage of differentiation is selected corresponding to 20 to 63 days of gestation.